Stormwater in Portland Harbor: What is DEQ Doing About It?

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Presentation Overview

- Overview of source control efforts
  - DEQ's objectives
  - General approach
  - How the City's Outfall RI fits in
- Stormwater evaluation
  - Integration into RI/FS
  - DEQ's objectives and approach
  - Joining forces to move forward

DEQ's Stormwater Objectives

- Reach agreement on a methodology for evaluating the stormwater pathway
- Implement necessary stormwater source control measures and compliance monitoring in advance of ROD
- Establish a long term compliance mechanism to ensure sufficient control in the future and provide certainty for sites

Joint Source Control Strategy

Objectives

- Prevent recontamination of river sediments
- Identify and characterize sources early
- Establish clear process to evaluate, assess and control sources
- Prioritize sites
- Coordinate source control with in-water RI/FS

Stormwater Challenges

- New territory for Cleanup Program
  - Technical expertise
  - Coordination with other DEQ programs and City of Portland
- Difficult to characterize stormwater discharges
- Uncertain targets
- Mechanism for ensuring ongoing compliance

Stormwater Screening in 06/07

1. Characterize site
2. Identify COIs
3. Sample catch basin solids
4. Screen against SLVs
5. If exceedences, sample stormwater
6. Screen water samples against SLVs

Possible Next Steps:

- Source control measures/BMPs
- Conduct loading analysis

Source Control Actions

- Remove or cap contaminated soil
- Upgrade &/or maintenance of stormwater system to prevent contaminated GW from entering system
- Implement BMPs
- Install stormwater treatment systems

Best Management Practices

Methods to prevent contaminants from entering stormwater system & reaching receiving waters.

BMPs should focus on “source reduction” as much as possible.

Treating contaminated stormwater to remove pollutants before the runoff leaves site is the next option.

Coordination with City of Portland

- City stormwater system covered under MS4 permit; PH outfalls drain about. 35% of harbor uplands

- City administers the NPDES 1200Z & 1300J general stormwater permits thru a 1994 MOA with DEQ

- BES ensures coordination among City program affected by source control activities (public works, planning and development, etc.)

DEQ/City IGA

2003 IGA for Remedial Investigation and Source Control Measures:

"…*work cooperatively to evaluate and control potential upland sources of discharges to City's stormwater system*"

"…*coordinate with each other in the development and implementation of an inter-agency site discovery program*"

DEQ "*shall solicit and consider BES comments on proposed site discovery, assessment, source control actions, remedy selection, and cleanup activities directly related to discharges to the City collection system*."

Joint DEQ/COP Objectives

"Identify all hazardous substance source areas or discharges into [City-owned] stormwater outfalls…..focus on upland operations that may have resulted in a release of hazardous substances discharging into the city stormwater system."

"Evaluate all contaminant migration pathways to the City's system…"

"Collect sufficient data and historical information to allow the identification of possible upland areas contributing to sediment contamination adjacent to the City outfalls."

"Generate or use data of sufficient quality for outfall basin characterization, and identifying and developing appropriate upland source control measures. Using BES and DEQ authorities implement or require source control measures to protect river sediment and surface water quality."

Outfall RI Objectives

1. Evaluate the potential for city-owned outfalls to contribute to Willamette River sediment contamination or the recontamination of sediments within the Portland Harbor Superfund site.

2. Identify significant sources of contaminants for each outfall using the authorities of DEQ and the City.

3. Collect and evaluate sufficient data to determine if source control measures are needed for each outfall.

Outfall RI: Work to Date

- Preliminary Assessment and prioritization of outfalls in/near the ISA
- Source Control Pilot Project for basins M-1 and 18
  - in-water sediment sampling at outfalls
  - upland source assessment
  - in-line sediment sampling and site discovery
- Ongoing basin-specific investigations; technical memos/reports submitted to DEQ

Outfall Sampling

- DEQ directed the City to sample stormwater at all City outfalls
- Initial objective is to determine need for additional source control
- Begin sampling this year; submit strategy and timeline for completing all sampling
- Compile existing City stormwater data
- Pilot loading study on two high priority outfalls

Completing the Outfall RI

- Understand potential sources and nature of discharge at each outfall; determine next steps for City and DEQ
- WOE determination for each outfall; different outfalls will require different amounts of data
- Source control doesn’t need to be complete but needs to be addressed
- Timeline needs to align with in-water RI/FS

SW Source Control Challenges

- Little information currently available about the load of COIs entering Portland Harbor via stormwater
- Lack of empirical data about significance of effects on Willamette River water sediments
- In-water Remedial Objectives not established yet; don't have a target to shoot for
- Variable nature of stormwater makes it challenging to characterize adequately
- The more significant stormwater is as a source, the more data will be needed to provide confidence for decision-making
- Lack of certainty a headache for property owners

Stormwater Evaluation Goals and Objectives

GOAL: Ensure stormwater data of sufficient quantity and quality is available to complete in-water RI/FS

Objectives:

- Investigate use of Fate and Transport model as a tool for evaluating stormwater impacts at various scales
- Understand relative importance of stormwater compared to other sources
- Determine data needs and guide development of workplans to collect necessary stormwater data
- Provide information necessary to determine source control needs (present and future)

Stormwater around the Region

	Thea Foss	Lower Duwamish	Portland Harbor
Waterbody	Manmade embayment Stormwater is only influent	Lower 5 miles of 90-mile Green River	Lower 11 miles of 300-mile Willamette River
Drainage area	9 square miles	22 square miles Green River basin = 492 sq. miles	17 square miles Willamette R. basin = 11,500 sq. miles
Hydraulics	Tidal; stratified salt wedge	Tidal; stratified salt wedge Mean annual dschg. >2000cfs	Tidally influenced Avg. flows from 9000–58,000 cfs

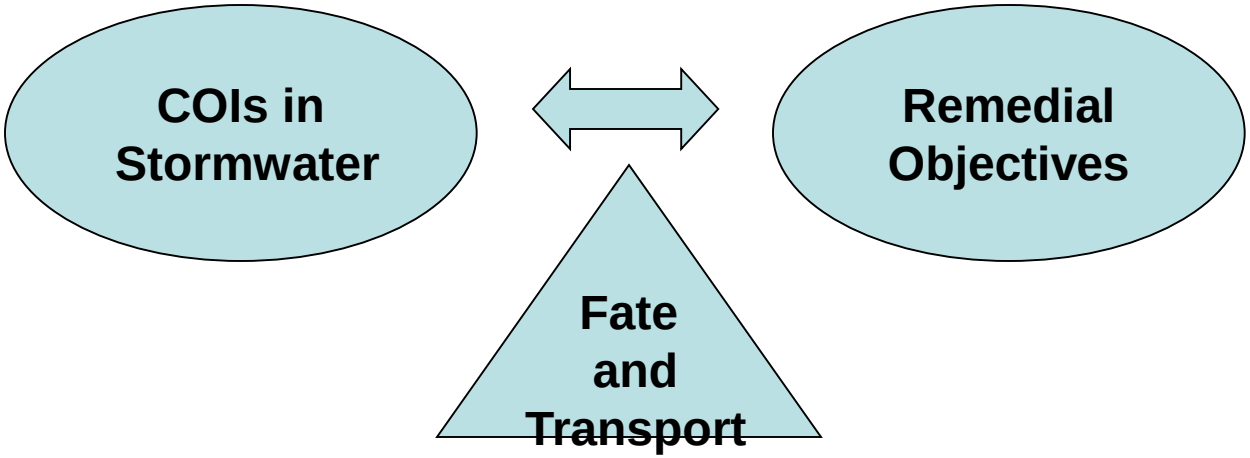
What do we know about stormwater in Portland Harbor?

- Approximately 250 non-City outfalls in ISA, about 100 under NPDES permit
- 20 City stormwater outfalls draining about 35% of the harbor uplands
- *[Provide data from grid model (X% of annual average volume of river; TSS stats)?]*
- *[Outfall 19 data?]*

Site-specific Stormwater Data

- Data being collected at upland sites and City outfalls
- Mostly concentration data; not loading
- Certain sites doing more in-depth characterization
- Awaiting Round 2 report (PRGs and AOPCs) to hone strategy

Stormwater Evaluation



What's in stormwater?
What happens to it once it reaches the river?
How does this relate to the Remedial Objectives for water and sediment?

How much source control is enough?
What's "good enough" for the ROD?

Initial Modeling Objectives

- Learn more about how the Fate and Transport model works and what it can do for us
- Get very rough sense of relative impact of stormwater on PH water and sediments
- Explore spatial and temporal variability of stormwater impacts
- Use info to help shape next steps, such as:
  - Designing next round of model runs
  - Identifying data needs and data quality objectives

Model Inputs

Data sources for initial model runs:

- Use City's Grid model to estimate volume of river flow and stormwater runoff from Study Area
- Use existing PH stormwater concentration data and/or literature values
- Iterative process – run, review and refine

Modeling Goals

- How many years to recontaminate sediment if we assumed a “typical” concentration
- Concentration of a COI in stormwater that would recontaminate sediment in X years
- Understanding of “pulsed” inputs vs. daily, seasonal or annual inputs
- Stormwater impacts at low vs. high flows
- Concentration that causes a “signal” in fish [link to Food Web model]

What do we hope to learn?

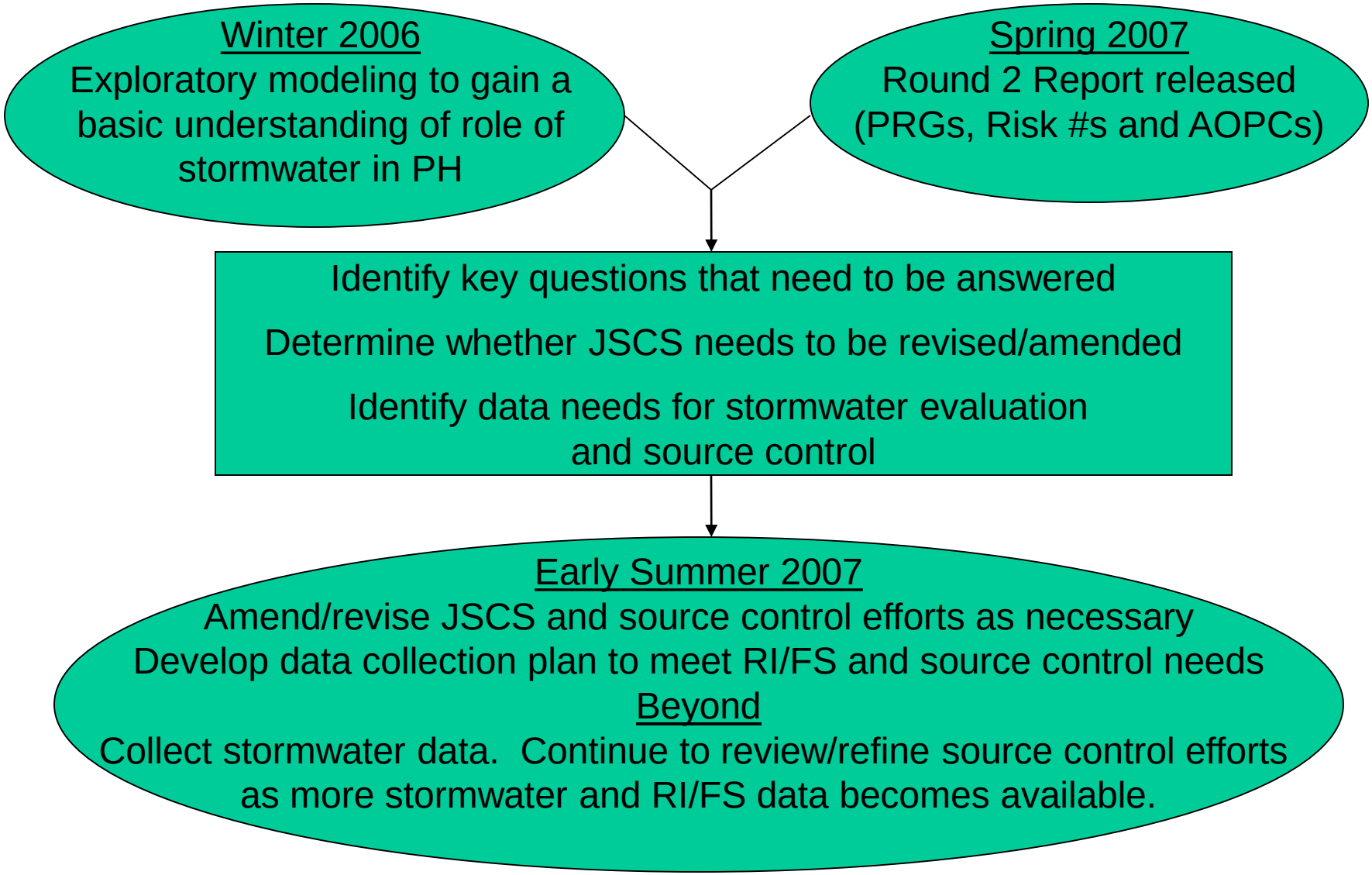
Looking for insights on:

- How “sensitive” the system is to stormwater inputs
- Relative magnitude of stormwater vs. other sources of COIs
- How “clean” stormwater runoff needs to be to avoid causing harborwide (water column) risk
- Locations where stormwater poses greatest risk for recontaminating sediment

Anticipated Next Steps

- Rerun using Round 2 info (PRGs and AOPCs) and “hybrid” model when available
- Identify areas/outfalls where more stormwater data is needed.
- Define data quality objectives and develop data collection plan.
- Review and revise source control strategy and priorities as necessary.
- Establish targets for evaluating adequacy of source control efforts and long term stormwater management tools (permits)

Path Forward

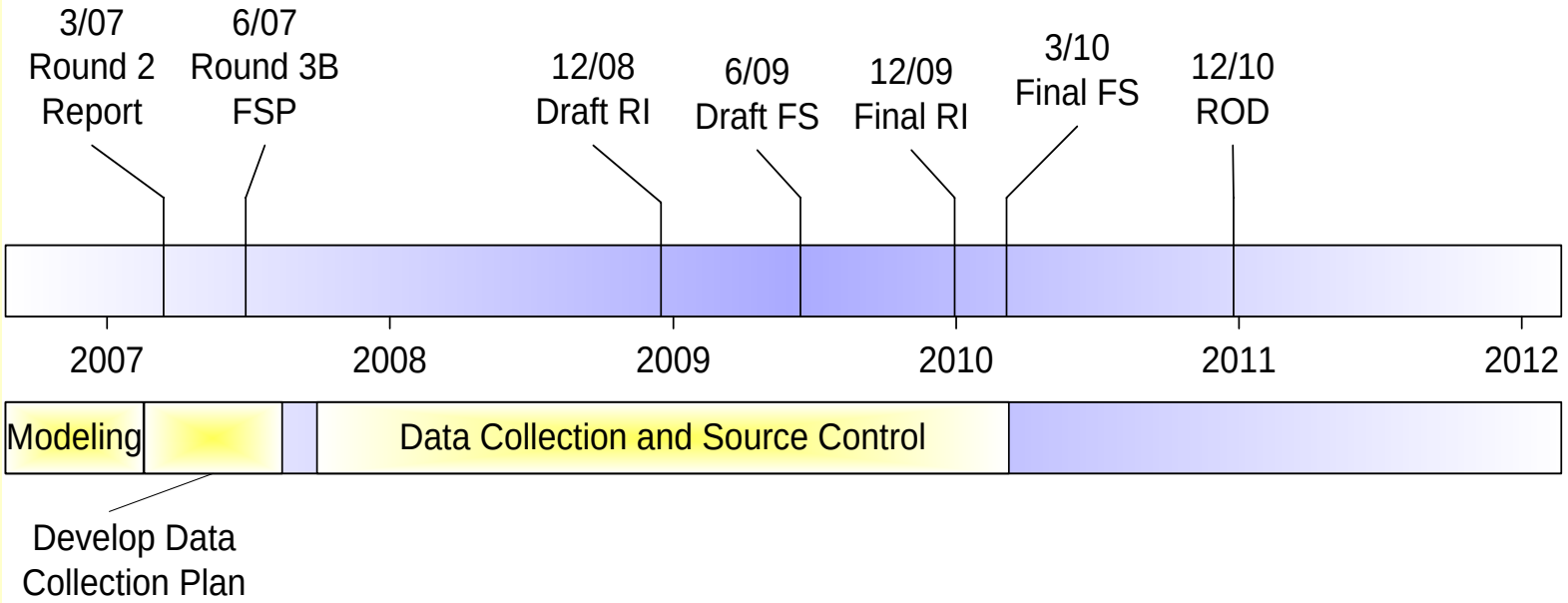


How much can we rely on the model output?

- Need to keep asking the question
- Answer is related to the magnitude of the problem that stormwater presents
- Look for ways to verify model and/or alternative methods for evaluating stormwater impacts

Timeline

ROD TIMELINE



STORMWATER EVALUATION AND SOURCE CONTROL TIMELINE